



Transport and Logistics Bureau
The Government of the
Hong Kong Special Administrative Region
of the People's Republic of China



Environment and Ecology Bureau
The Government of the
Hong Kong Special Administrative Region
of the People's Republic of China



ACTION PLAN ON GREEN MARITIME FUEL BUNKERING





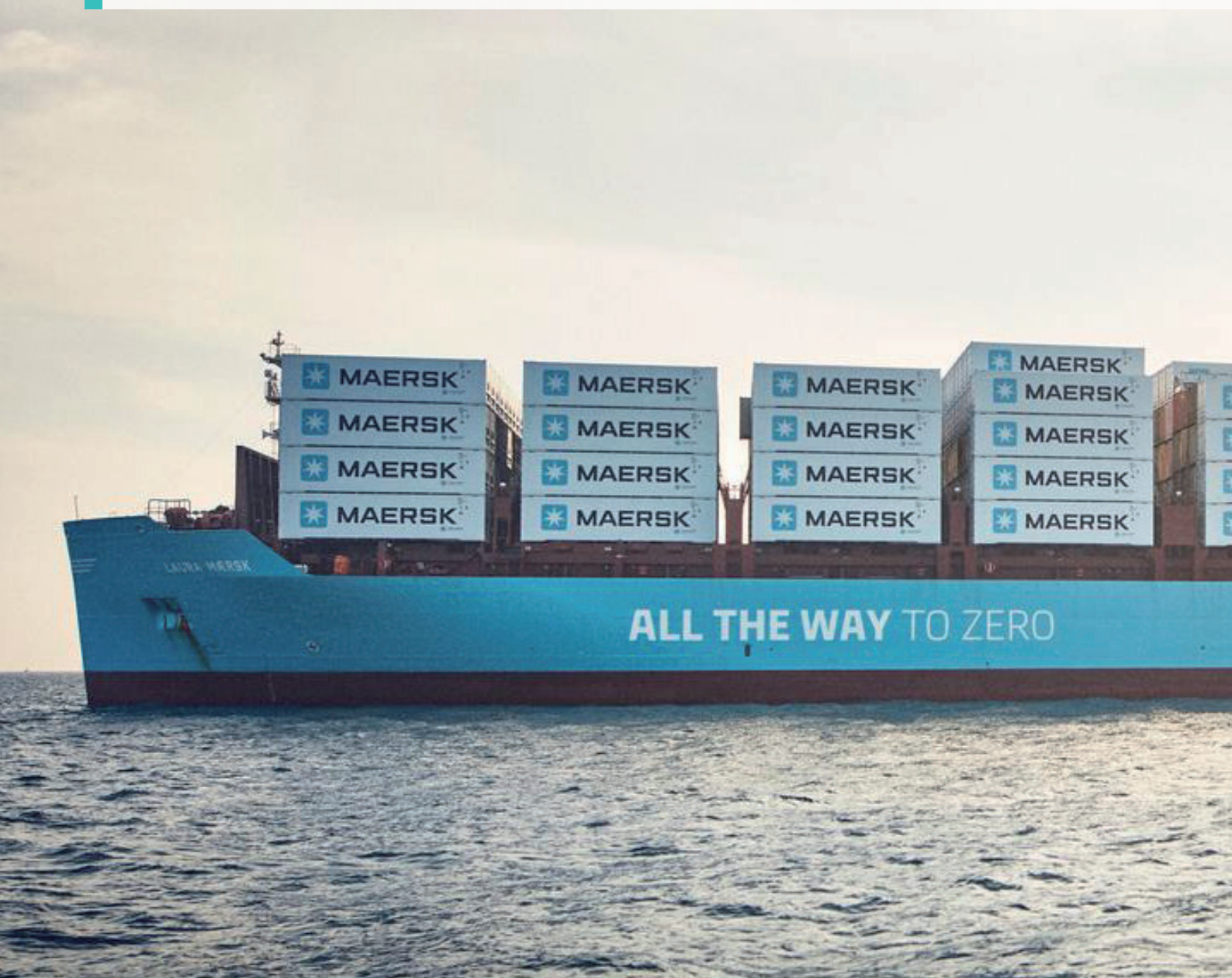
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Executive Summary

In facing the challenges posed by climate change, different industries around the world are striving to reduce their carbon emissions progressively. Driven by the International Maritime Organization (IMO) and various countries, the maritime industry, which accounts for about 3% of the world's carbon emissions, is also striving to reduce its emissions. Switching from traditional fossil fuels to green maritime fuels is the most effective among various measures to reduce shipping emissions.

As an IMO Associate Member, Hong Kong will follow the IMO's target of achieving net-zero carbon emissions from international shipping by or around 2050. Hong Kong will also follow the international trend of green shipping by providing fuels as needed by ships powered by different green fuels, so as to maintain its competitiveness as an international maritime centre.



The Chief Executive announced in his 2023 Policy Address the development of Hong Kong into a green maritime fuel bunkering centre. The Transport and Logistics Bureau (TLB), in collaboration with the Environment and Ecology Bureau (EEB), commenced a feasibility study on the provision of green maritime fuels for local and ocean-going vessels in February 2024 and formulated this Action Plan for developing Hong Kong into a high-quality green maritime fuel bunkering centre with a view to encouraging and motivating the industry to provide green maritime fuel bunkering services and thereby supporting the green transformation of the maritime industry.



Our targets on this front include –

- To follow the emission reduction checkpoints set out by the IMO in the 2023 IMO Strategy on Reduction of Greenhouse Gas Emissions from Ships, namely –
 - ◆ to reduce the total annual carbon emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008;
 - ◆ to reduce the total annual carbon emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008; and
 - ◆ to reach net-zero carbon emissions from international shipping by or around 2050;
- to reduce carbon emissions from Hong Kong-registered ships by at least 11% (compared to 2019), driven by the Green Incentive Scheme on Carbon Intensity Indicator by 2026;
- for 55% of the diesel-fuelled vessels (166 in total) in the Government fleet to switch to using green maritime fuels (including bio-diesel in low concentration) by 2026, subject to fuel availability;
- to reduce carbon emissions from the Kwai Tsing Container Terminals by 30% by 2030 (compared to 2021); and
- for 7% of the Hong Kong-registered ships to take up green maritime fuels by 2030.



To achieve the above targets, we have set out five green-centric Strategies and ten Actions with specific action targets:

Strategy 1 Green Fuels	Action 1: To adopt a multi-fuel strategy for a zero carbon emission future	Specific Actions: 2024 : <ul style="list-style-type: none"> • To start encouraging the use of bio-diesel • To complete the drafting of the Code of Practice (CoP) on liquefied natural gas (LNG) bunkering 2025 : <ul style="list-style-type: none"> • To complete the drafting of the CoP on green methanol bunkering • To commence early preparation for the next stage of green maritime fuel adoption, including setting the future development directions for hydrogen and green ammonia bunkering in Hong Kong
	Action 2: To catalyse the green maritime fuel supply chain and trades	Specific Actions: 2025: <ul style="list-style-type: none"> • To establish the Green Maritime Fuel Bunkering Incentive Scheme to encourage pioneer enterprises to start green maritime fuel bunkering businesses in Hong Kong • To provide a platform for forging cooperation among stakeholders interested in developing green maritime fuel bunkering in Hong Kong
Strategy 2 Green Port	Action 3: To develop a green maritime fuel bunkering ecosystem	Specific Actions: 2024: <ul style="list-style-type: none"> • To enact the Shipping Legislation (Use of Fuels and Miscellaneous Amendments) Ordinance 2024 2025: <ul style="list-style-type: none"> • To invite Expressions of Interest from the industry in the conversion of a land parcel near the port in Tsing Yi South for green maritime fuel storage 2026: <ul style="list-style-type: none"> • To designate anchorages and sheltered spaces for barges for green maritime fuel bunkering
	Action 4: To simplify the approval process for green maritime fuel bunkering	Specific Actions: 2024: <ul style="list-style-type: none"> • To set up a task force in the Marine Department to provide one-stop service to green shipping-related organisations interested in establishing a presence in Hong Kong

Action 5:
To reduce carbon emissions from port operations

Specific Actions:

2024:

- To continue to liaise closely with port operators with a view to encouraging the adoption of different approaches to reduce carbon emissions from port operations

Action 6:
To holistically build a green Government fleet

Specific Actions:

2024:

- Marine Department to set up an inter-departmental working group with Government departments which have ships suitable for using green maritime fuels, to explore and enhance understanding of the technological development in relation to vessels using green maritime fuels on a regular basis

Strategy 3
Green Incentives

Action 7:
To subsidise green transformation of vessels

Specific Actions:

2025:

- To announce details on reduction in port dues and registration fees for ships powered by green fuels and complete the relevant legislative procedures
- To explore the provision of tax exemption for green methanol used for bunkering

Action 8:
To develop green-friendly arrangements for usage of port facilities

Specific Actions:

2025:

- To formulate and announce arrangements for priority use of port facilities by vessels using green maritime fuels
 - To enhance publicity to promote green maritime fuels to the industry
-



Strategy 4**Green
Collaboration**

**Action 9:
To foster regional
cooperation in relation
to green maritime fuel
bunkering**

Specific Actions:

2024:

- To commence discussion and collaboration on talent training and green maritime fuel supply within the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) and with other provinces in Mainland China

2026:

- To identify at least one suitable port for developing a new green shipping corridor with Hong Kong and commence discussion with the port on the establishment of our first green shipping corridor, as well as consider joining existing green shipping corridors when appropriate

Strategy 5**Green
Expertise**

**Action 10:
To nurture talents in
relation to green
maritime fuels**

Specific Actions:

2024:

- To start identifying training programmes related to green maritime fuels, so as to provide training and exchange opportunities to practitioners from Hong Kong and other places
- To continue to facilitate the admission of relevant talents to Hong Kong through various schemes

2026:

- To launch a new funding scheme to support local industrial organisations and academic institutions to organise large-scale maritime seminars, workshops, conferences, etc. in Hong Kong annually to promote knowledge exchange among local and non-local industry players
- To train 50 green maritime fuel-related talents



Background

The maritime industry traditionally uses mainly fossil fuels such as heavy fuel oil, diesel and petrol and the industry's carbon emissions account for about 3% of the world's total emissions. In order to minimise the negative impact of its operations on the environment, reduction in carbon emissions and green transformation emerge as a key direction of future development of the maritime industry.

The Paris Agreement, signed in 2016, urges countries to reduce carbon emissions through means including promoting energy efficiency measures, encouraging the use of alternative fuels and promoting innovation in technologies and infrastructure. It also encourages the international maritime industry to contribute to the goal of limiting global temperature increase to less than 1.5 degrees Celsius. To reduce carbon emissions and air pollution, the IMO under the United Nations has set a low-sulphur emission standard. Since 1 January 2020, the maritime industry has been required to switch from high-sulphur heavy fuel oil to low-sulphur fuels or alternative fuels with lower sulphur emissions, such as LNG. In addition, the IMO has set a target in its 2023 IMO Strategy on Reduction of Greenhouse Gas Emissions from Ships to reach net-zero carbon emissions by or around 2050, with a view to limiting the temperature rise to less than 1.5 degrees Celsius as stipulated in the Paris Agreement. The IMO has also put forward indicative checkpoints on this front in the Strategy, which include reducing the total annual carbon emissions from international shipping by at least 20%, striving for 30%, by 2030 compared to the level in 2008; and by at least 70%, striving for 80%, by 2040. It is expected that the IMO will endorse by 2025 a series of medium-term measures reducing carbon emissions, including promulgating a maritime fuel standard regulating the phased reduction of the carbon intensity of maritime fuels and launching a global maritime carbon pricing mechanism. These medium-term measures are expected to take effect in 2027 with a view to further promoting the use of green and low-carbon fuels by the industry.

Our Country attaches great importance to climate change and sets corresponding targets in major areas such as carbon peak and carbon neutrality in the 14th Five-Year Plan for Economic and Social Development and Long-range Objectives Through the Year 2035 of the People's Republic of China (the 14th Five-Year Plan). The 14th Five-Year Plan Comprehensive Work Plan for Energy Conservation and Emission Reduction also sets out ten key energy conservation and emission reduction projects, covering a wide range of areas and industries, including for the maritime industry, promoting the development of green ports and enhancing the promotion and application of clean maritime fuels. The 14th Five-Year Development Plan for the Maritime System has further set out a series of strategies related to carbon peak and carbon neutrality for the maritime industry, including promoting the establishment of a national Ship Energy Efficiency Centre, actively participating in the global governance of emission reduction of the maritime industry and encouraging vessels to use clean, green and low-carbon maritime fuels.

Many companies in the maritime industry are actively adopting strategies to reduce the carbon emissions of their fleets and take up their environmental, social and governance (ESG) responsibilities. These include adoption of energy-saving technologies to enhance the energy



efficiency of vessels, timely replacement of vessels to take up more energy-efficient modern vessels and use of smart maritime technologies to better plan and optimise shipping routes for day-to-day operations. However, such technologies are still far from sufficient for the maritime industry to realise the vision and industrial consensus on zero carbon emissions with the continued usage of fossil fuels. As the development of green maritime fuels becomes more mature in recent years and economies have been tightening their regulations related to carbon emissions from vessels, especially with the European Union (EU) extending its European Union Emissions Trading System (EU ETS) to cover the maritime sector, switching to zero-emission green maritime fuels and replacing vessels with green fuel-powered ones have become indispensable in the maritime industry's green transformation and sustainable development strategy. Currently the number of vessels which can be powered by green maritime fuels such as LNG and green methanol is increasing globally and this trend is expected to continue.

As an international maritime centre, Hong Kong has been committed to implementing green port initiatives and encouraging the industry to adopt more sustainable practices. For example, Hong Kong was the first port in Asia to mandate the switch to low-sulphur fuel for ocean-going vessels at berth. The Government has also been working with Mainland China to reduce emissions from vessels, including implementing a domestic emission control area in the Pearl River Delta region jointly with the People's Government of Guangdong Province in 2019, to further tighten the requirement for all vessels to use compliant fuels such as low-sulphur fuels or LNG, regardless of whether they are sailing or at berth. As an Associate Member of the IMO, Hong Kong is obliged to ensure that our local legislation and regulations comply with the requirements of the IMO, including those on environmental protection, reduction of carbon emissions and promotion of sustainable international shipping. At the same time, Hong Kong needs to keep abreast of the international trend in green shipping in order to maintain our competitiveness. To this end, the Chief Executive announced in his 2023 Policy Address the development of Hong Kong into a green maritime fuel bunkering centre. TLB, in collaboration with EEB, commenced a feasibility study on the provision of green maritime fuels for local and ocean-going vessels in February 2024 and formulated this Action Plan. We aim to develop Hong Kong into a high-quality green maritime fuel bunkering centre through five Strategies and ten Actions, so as to encourage and drive the industry to provide green maritime fuel bunkering services and to support the green transformation of the maritime sector.

Definition of Green Maritime Fuels

Currently, vessels are mainly powered by fossil fuels such as heavy oil. Combustion of fossil fuels produces carbon dioxide, which exacerbates greenhouse effect and climate change. As low-carbon alternatives to fossil fuels, green maritime fuels have significantly less carbon emissions throughout their lifecycles¹ (including during combustion) and may even achieve zero carbon emissions.

Advantages, disadvantages and current development of various green maritime fuels

Fuel type	Advantages
<p>Bio-diesel: Usually generated from vegetable oil, waste oil or animal fat</p>	<ul style="list-style-type: none"> • Mature production technology and relatively stable supply • Depending on the feedstock, carbon emissions from pure bio-diesel can be up to 80% less than those from regular diesel • Bio-diesel can be blended with diesel. Depending on the blending ratio, blended bio-diesel can be used directly in existing bunkering facilities and by existing vessels without the need to modify engines or fuel tanks • Currently available at a lower cost than other green maritime fuels
<p>LNG: Most LNG currently in use is fossil-based, but methane, the chemical component of LNG, can also be produced through anaerobic digestion of biomass (bio-LNG) or chemical synthesis using carbon dioxide, green hydrogen and renewable electricity (e-LNG)</p>	<ul style="list-style-type: none"> • Bio-LNG production technology is more mature with huge potential supply • Non-toxic and non-corrosive, with lower safety risk than green methanol, hydrogen, green ammonia, etc. • Depending on the feedstock used, LNG emits up to 90% less carbon than regular diesel. Even if fossil LNG is used, carbon emissions can still be reduced by about 20% • Fossil LNG is already widely traded internationally, and although the price is unstable, it is lower than that of other green maritime fuels. Bio-LNG is also relatively less expensive
<p>Green methanol: Can be produced from domestic waste, biomass or bio-methane (bio-methanol), or chemically synthesised using carbon dioxide, green hydrogen and renewable electricity (e-methanol)</p>	<ul style="list-style-type: none"> • Liquid at ambient temperature and pressure and existing infrastructure for liquid fuel bunkering can be used for methanol bunkering after some modifications • Carbon emissions can be up to 90% lower than those from regular diesel • Suitable for most vessels travelling into and out of Hong Kong
<p>Hydrogen: Can be produced by electrolysis of water using renewable electricity</p>	<ul style="list-style-type: none"> • Adequate supply of raw materials for production, which is essentially only limited by the development scale of renewable electricity • Carbon emissions can be more than 90% lower than those from regular diesel
<p>Green ammonia: Can be produced by chemical synthesis using electrolytic water splitting or green hydrogen, as well as nitrogen in the air</p>	<ul style="list-style-type: none"> • Supply is limited only by the development scale of renewable electricity, with other feedstock in adequate supply • Carbon emissions can be more than 90% lower than those from regular diesel fuel

¹ A life cycle includes the production, transportation, extraction and combustion of fuels.

The vast majority of green maritime fuels (with the exception of fossil LNG) are produced from biomass and waste or are chemically synthesised. Some green maritime fuels are already in use on vessels, while some are still being tested and developed. The characteristics and current development of major green maritime fuels are set out below:

Disadvantages	Development progress
<ul style="list-style-type: none"> Depending on the blending ratio, bio-diesel fuel still produces more carbon emissions than other green maritime fuels As some bio-diesel may be produced from crops or the same feedstock as that for producing sustainable aviation fuels (SAF), its future supply will be determined to a certain extent by the competition for feedstock Rapid degradation in water and high condensation point may lead to filter clogs or poor fuel flow at low temperatures 	<ul style="list-style-type: none"> Bio-diesel is produced locally in Hong Kong and Mainland China Bunkering service providers in Hong Kong can already bunker bio-diesel fuels ranging from B5 (diesel blended with 5% bio-diesel) to B24 (diesel blended with 24% bio-diesel)
<ul style="list-style-type: none"> LNG vapour is highly flammable Must be stored at extremely low temperatures (approximately -162 degrees Celsius) and requires modifications or new bunkering infrastructure and vessels for handling and use With a lower density and the need for low-temperature storage, it requires about three times the storage space for conventional fuels Combustion of LNG may emit unburnt methane and generate additional greenhouse gases The price of e-LNG is very high 	<ul style="list-style-type: none"> The anaerobic digestion technology for producing bio-LNG is relatively mature; while most of the current projects are small-scale, there is huge production potential E-LNG production technology is not mature yet and the production capacity is small As a transitional fuel, many ports are already able to provide vessels with fossil LNG The number of ships using LNG is gradually increasing
<ul style="list-style-type: none"> Flammable and highly toxic with an invisible flame Lower density and requires about twice the storage space for conventional fuels The price of green methanol is currently very high 	<ul style="list-style-type: none"> Currently, the production capacity of bio- and e-methanol is relatively low, but with the maturity of relevant technologies, it is expected that the production capacity will grow rapidly; Mainland China will be a major production base Only a few green methanol-powered vessels are currently in operation, but there are already many orders for new-builds or conversion of existing vessels into green methanol-powered vessels
<ul style="list-style-type: none"> Highly flammable with risk of explosion at high concentrations Requires storage at a very low temperature (below -253 degrees Celsius) under high pressure Lower density than other green maritime fuels and requires a large storage space 	<ul style="list-style-type: none"> Production technology is mature, but the development of hydrogen-powered vessels is at an early stage, with very few hydrogen-powered vessels in operation or on order
<ul style="list-style-type: none"> Corrosive, explosive and highly toxic Needs to be compressed or cooled (at -33 degrees Celsius) for liquefaction for handling Lower density and larger storage space requirement Mainly suitable for larger ships 	<ul style="list-style-type: none"> Production technology is relatively mature and significant growth is expected in Europe Development of ammonia-powered vessels is at an early stage, with very few ammonia-powered vessels in operation or on order

Another characteristic of green maritime fuels is that they have a lower energy density compared with conventional maritime fuels. In other words, the distance that can be covered by a vessel using a green maritime fuel will be shorter than when a conventional maritime fuel of the same tonnage is used. For example, the energy density of methanol is only about half of that of conventional maritime fuels such as heavy fuel oil. Depending on its design and operation, a vessel solely using green maritime fuels may require more frequent bunkering.

Supply and Demand for Green Maritime Fuels

At present, green maritime fuels are not used in large quantities yet, and the technology for the production of certain types of green maritime fuels is still at the stage of research and development. Given the limited supply, the price of green maritime fuels is high. Due to the relatively small and immature market, the trading of green maritime fuels is currently conducted directly between fuel producers and users, with no unified trading platform and few intermediaries to co-ordinate the transactions. This mode of trading has resulted in lower market transparency and users may encounter a certain extent of difficulties in finding suitable fuel producers which can provide certified green maritime fuels.²

Currently, the total number of vessels in the world's merchant fleet exceeds 100 000, of which only a very small percentage can use green maritime fuels. However, as the IMO and various countries set out emission reduction targets, various ocean-going fleets have been flocking to order vessels that can use green maritime fuels. According to publicly available information, the numbers of various types of green fuel-powered vessels in operation or on order as at September 2024 are set out below:

The current number of green fuel-enabled ocean-going vessel in operation or on order

Fuel type	Ocean-going vessels in operation	Capacity for expansion in near-term demand
LNG	Over 600	Over 560 to be delivered by 2033
Green methanol	Over 50	Over 310 to be delivered by 2029 (mostly retrofitted)
Hydrogen	Less than 10	Around 20 to be delivered by 2029 (mostly vessels using hydrogen batteries instead of internal combustion engines)
Green ammonia	2	Around 25 to be delivered by 2027
Bio-diesel	All ocean-going vessels currently using heavy fuel can use low-concentration bio-diesel fuel	

Most of these ocean-going vessels that can use green maritime fuels (other than LNG) have dual-fuel engines, i.e. they can run on both diesel (including diesel blended with bio-diesel) and green fuels. In view of the higher prices of other green maritime fuels in the short to medium term, it is expected that many shipping companies will adopt bio-diesel for the time being in order to achieve emission reduction targets, thereby driving up the short term demand for bio-diesel.

² Currently there is no uniform international standard on green maritime fuels. The EU and the United States have standards applicable to their respective jurisdictions to meet their carbon reduction requirements. These standards are generally recognised by the maritime industry given the relatively large market sizes of those jurisdictions.

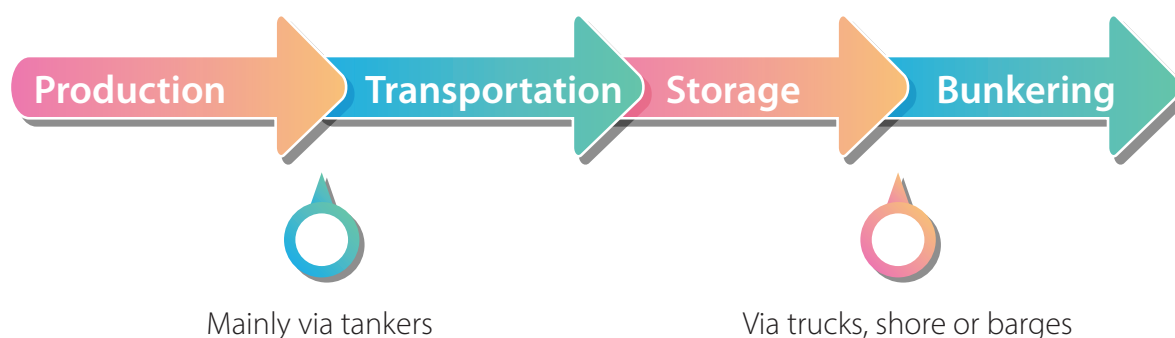


As the vast majority of green maritime fuels are produced from biomass and wastes or chemically synthesised, it is theoretically possible for individual countries and regions to produce their own green fuels. The production volume depends on their industrial capacity, production technology, and the availability of stable and affordable supply of feedstock and renewable electricity. Mainland China has obvious advantages in the production of green maritime fuels. On the one hand, Mainland China has a strong industrial production base and an inexpensive supply of renewable energy. On the other hand, its huge population provides sufficient domestic and agricultural wastes as feedstock for the production of bio-green fuels. In fact, Mainland China is already a major producer of green maritime fuels such as bio-diesel and green methanol, and is actively promoting the development of the production of clean hydrogen, green ammonia, etc. It is expected that Mainland China will continue to maintain its leading position in the supply of green maritime fuels in future.

Green Maritime Fuel Bunkering

Generally speaking, bunkering involves transportation of fuels from a production site to a bunkering port for storage, followed by collection of the fuels from a storage facility for bunkering when needed.

Process of using maritime fuels from production to bunkering



The basic steps for green maritime fuel bunkering are the same as those for conventional maritime fuels. However, as far as fuel tankers are concerned, given the low energy density of green maritime fuels, the volume of fuels required for bunkering would need to be larger than that of conventional maritime fuels in order to ensure sufficient endurance, hence the size of the relevant fuel tanks is generally larger. Fuel tankers carrying liquefied gases must also be equipped with pressurisation and refrigeration facilities to ensure that the gases remain in liquid form during transportation. As such, it would be more difficult to produce such tankers through retrofitting of existing vessels carrying conventional maritime fuels, and the cost of building new ones would also be higher.

On storage facilities, as green maritime fuels are mostly dangerous goods and some require storage at high pressure and low temperature, the building specifications for green maritime fuel storage facilities not only differ from those for conventional maritime fuels, but the requirements for facilities for different green maritime fuels are also different. An exception is bio-diesel fuel, which has similar characteristics to conventional maritime fuels, and hence the existing



storage tanks for storing conventional fuels can be used to store bio-diesel at relatively low concentrations without major modifications. In respect of construction cost, storage facilities with equipment for creating a high pressure and low temperature condition are generally expensive, and the hazardous nature of green maritime fuels means that the safety requirements and hence the cost for storage facilities are also higher. As for location, given the hazardous nature of green maritime fuels, it is preferable for their storage facilities to be located away from residential areas. For example, the Hong Kong Offshore LNG Terminal for receiving LNG is located in the waters east of the Soko Islands.

As for bunkering, such operations in respect of conventional maritime fuels are mostly carried out ship-to-ship by bunkering barges. In order to adapt to different characteristics of green maritime fuels, bunkering service providers may need to modify conventional bunkering barges or chemical tankers, or even build new and specially designed bunkering barges before they can carry out green maritime fuel bunkering operations. Among them, bunkering barges carrying gaseous fuels are often required to have equipment for maintaining an extremely low temperature and high pressure, hence their retrofitting or building costs are higher. In view of the safety risks associated with green maritime fuels, the industry needs to comprehensively review and confirm that the bunkering operations will not cause leakage or spillage of chemicals to ensure safety. Otherwise, it may lead to serious adverse impacts. Liquefied gas fuels stored at low temperatures also require a number of pre-bunkering preparatory procedures including safety checks, hence the whole bunkering process will take longer.

Overview of the Development of Green Maritime Fuel Bunkering around the World

Major ports around the world are making preparations for the provision of green maritime fuel bunkering services. Some among them have already implemented relevant complementary policies and measures, provided the relevant infrastructure, and are able to provide different types of green maritime fuels to ships.



Mainland China

Mainland China published an action plan for the green development of the shipbuilding industry in the end of 2023, proposing the initial establishment of a green shipbuilding industry by 2025, enhancement of its capacity to supply green vessels, and a target for the share of Mainland-made vessels using green maritime fuels such as LNG and green methanol in the international market to be more than 50%. This demonstrates the country's commitment to the development of green shipping. Some Mainland ports are providing subsidies to companies with ships using LNG and those providing LNG bunkering services.

Ports such as Shenzhen, Shanghai and Nansha can already provide LNG bunkering services and have set up LNG bunkering-related infrastructure. Nansha and Shanghai have also completed the demonstration of ship-to-ship green methanol bunkering, with Nansha having completed its first bio-diesel bunkering operation in 2024 as well.



Singapore

Singapore launched a Green Port Programme in 2022 to provide port dues reduction to vessels using low-carbon or zero-carbon maritime fuels. Currently, Singapore has identified bio-diesel and LNG as short-term transition fuels, while hydrogen, green ammonia, green methanol and bio-LNG will be explored in the long term.

Singapore's ports can already provide LNG and bio-diesel bunkering to ships. Demonstrations of green methanol and ammonia bunkering have also been completed, and a licensing framework for green methanol bunkering, currently under development, is expected to be announced in 2025.





The Netherlands

The Port of Rotterdam has set targets to reduce carbon emissions to 55% compared to 1990 levels by 2030 and to achieve carbon neutrality by 2050. It is building hardware and optimising the supply chain for green maritime fuels, and offering port dues reduction to vessels using low-carbon fuels (e.g. e-methanol and e-ammonia, etc.).

The port is currently able to provide ships with fuels including bio-diesel, LNG and green methanol, as well as hydrogen for smaller vessels. The Port of Rotterdam is also increasing its bunkering capacity for green methanol and green ammonia.



South Korea

The Port of Ulsan has established the Ulsan Port Carbon-Neutral Roadmap, with the aim of achieving zero carbon emissions in the port by 2050. The port is constructing relevant infrastructure, increasing the handling capacity for LNG, making preparations for hydrogen bunkering, as well as establishing a carbon-neutral port ecosystem. It is also offering port dues reductions for ships using LNG and low-sulphur fuels.

The port has completed demonstration operations for LNG and green methanol bunkering.





Measures to Encourage the Use of Green Maritime Fuels and Promote the Development of Green Maritime Fuel Bunkering in Various Regions

In formulating policies on green maritime fuels in various parts of the world, the main focus is on encouraging the industry to adopt green maritime fuels on a voluntary basis. The governments of ports in places such as Singapore, the Netherlands and South Korea have generally adopted incentives such as the reduction of ship registration fees and port dues for green maritime fuel-powered vessels and tax deduction for imported green fuels to encourage shipping companies to switch to green maritime fuels. Some ports have also launched pilot schemes to encourage pioneers in green maritime fuel bunkering. For example, Singapore provides subsidies to companies developing and testing green maritime fuels, while South Korea offers various port-related fee waivers to companies participating in green maritime fuel bunkering demonstration projects at the Port of Ulsan.

In the EU, the use of green maritime fuels by ships is driven by statutory requirements. As the European market is relatively large, it has sufficient market power to promote the use of green maritime fuels by the industry by penalising the use of fossil fuels. Currently, the EU has announced the extension of the EU ETS to cover carbon emissions from all large ships travelling into and out of EU ports. Shipping companies are required to report their emissions annually and may buy or receive emission trading credits. As such, the levy on maritime carbon emissions will prompt a switch to cleaner fuels. However, this measure is generally not applicable to a single country or region with a small market size.

Some local governments in Mainland China provide cost subsidies and incentives to green maritime fuel bunkering barges, vessels using green fuels and companies providing green fuel bunkering services. The governmental financial commitment is higher, yet the sustainability of such measures is relatively low.

As we noticed, the governments of the aforementioned places use measures such as granting port dues reduction, cost subsidies and incentives to promote the use of green maritime fuels, given that the price of these fuels and the construction cost of vessels using such fuels are currently very high. However, with the increase in demand and production scale of green maritime fuels, it is expected that the price of green maritime fuels will gradually come down. The associated financial measures would also likely phase out gradually.

Hong Kong's Current Status as a Bunkering Centre and Potential to Develop into a Green Maritime Fuel Bunkering Centre

Hong Kong, with experience in providing traditional maritime fuel bunkering services for many years, is currently one of the top ten bunkering centres in the world. According to the China Petroleum Circulation Association, Hong Kong ranked seventh among the world's top ten bunkering ports in 2023. In that year, 22.5% of the ocean-going vessels visited Hong Kong with the primary aim being bunkering. This is attributed to Hong Kong's reputation as an internationally renowned shipping centre and the only free port in China; its strategic location at the mouth of the Pearl River at the southern tip of South China and at the centre of Asia, with a well-developed network of shipping routes; as well as having a port and container terminal facilities of high quality. At present, about 5 000 ocean-going vessels visit Hong Kong annually, many of which make multiple stopovers and bunker here throughout the year. In view of the IMO's emission reduction targets, we expect that Hong Kong will provide bunkering services to ocean-going vessels powered by green maritime fuels such as LNG or green methanol for over 60 times a year by 2030³, with over 200 thousand tonnes of green maritime fuel. Coupled with the fact that the vast majority of existing vessels can switch to use bio-diesel fuels at a certain concentration immediately, Hong Kong is well-placed to develop into a green maritime fuel bunkering centre as long as there is a steady supply of green maritime fuels in Hong Kong.

Unlike conventional fuels, green maritime fuels are made from biomass or chemically synthesised, and can theoretically be produced anywhere in the world. At present, Hong Kong has companies producing pure bio-diesel (B100) that meets international standards such as EN 14214 of the EU and ASTM D6751 of the United States, with an annual production capacity of over 100 000 tonnes. The blended bio-diesel fuel can be used by ships immediately to meet short-term emission reduction needs. Meanwhile, as Mainland China is a major producer of various types of green maritime fuels, Hong Kong, with strong support of the Motherland, has an advantage in importing green maritime fuels from Mainland China and establishing a stable supply chain.

3 Currently over 20% of ocean-going vessels visit Hong Kong primarily for bunkering, while on average vessels visiting Hong Kong make four stopovers here per year. Hence assuming that 1.4% of the world fleet are green maritime fuel-powered vessels by 2030, proportionally those ships will stopover in Hong Kong and bunker for over 60 times.



As Hong Kong is an international financial centre with free flow of capital, companies can settle payments immediately after the delivery of green maritime fuels in Hong Kong, which can help alleviate the pressure on cash flow. The provision of various professional services in Hong Kong also facilitates the conduct of green maritime fuel-related transactions in the city.

In fact, the Government has already commenced preparatory work for the development of green maritime fuel bunkering. For example, the Shipping Legislation (Use of Fuels and Miscellaneous Amendments) Bill 2024, which was introduced into the Legislative Council in mid-2024 and passed in October 2024, allows the safe use of various types of new fuels by vessels. We have also reached out to different stakeholders, including operators interested in developing green maritime fuel bunkering in Hong Kong and shipping companies that will use such fuels, to understand their needs in implementing green maritime fuel bunkering. At the same time, the Marine Department is also formulating codes of practice on different types of green maritime fuels to provide the industry with clear specifications and guidelines and offering technical assistance to operators which intend to conduct LNG bunkering in Hong Kong.

Hong Kong admittedly also faces challenges in the development of green maritime fuels bunkering, including gaps in relevant laws and regulations, the shortage of local production capacity of green maritime fuels and hence the need to rely on imports, and a lack of experience in handling green maritime fuels and training technicians with relevant skills. As most green fuels are dangerous goods which need to be stored and bunkered at sites away from residential areas, the availability of suitable sites for such purposes is currently limited. Externally, some of our neighbouring ports have already established certain foundation in green fuel bunkering, while international shipping is increasingly influenced by geopolitics, which will in turn affect our shipping industry. All these may also indirectly affect the market for green maritime fuel bunkering services in Hong Kong.

Nonetheless, Hong Kong has great potential to develop into a high-quality green maritime fuel bunkering centre. At present, there is no large-scale green maritime fuel bunkering centre in the Central East Asia region. Hong Kong can leverage its edge in geographical location to become the preferred green maritime fuel bunkering centre in the region. As some of the green maritime fuel technologies are now more mature than in earlier years and the industry has accumulated relevant experiences, the development of green maritime bunkering in Hong Kong will be faster. In addition, Hong Kong can expedite the provision of infrastructure for the storage and handling of green fuels by retrofitting some of the existing facilities. Coupled with the collaboration with Mainland cities within and outside the GBA, Hong Kong has potential to facilitate the export of Mainland-produced green maritime fuels to the rest of the world, and may even become an international trading centre for green maritime fuels on the back of its mature financial system, good business environment and reputation, and regulatory regime in line with international standards. Green maritime fuels are also a kind of bulk commodity and will benefit from the initiative of creating a Commodity Trading Ecosystem as proposed in the Chief Executive's 2024 Policy Address. We will rise to the challenge and make every effort to promote the development of green maritime fuel bunkering, so as to attract an increasing number of green maritime fuel-powered vessels to Hong Kong for bunkering, thereby maintaining Hong Kong's position as the world's leading bunkering port and consolidating Hong Kong's status as an international maritime centre.



Action Targets

To develop Hong Kong into a high-quality green maritime fuel bunkering centre, our targets are as follows –

- **To follow the emission reduction checkpoints set out by the IMO in the 2023 IMO Strategy on Reduction of Greenhouse Gas Emissions from Ships, namely –**
 - ◆ to reduce the total annual carbon emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008;
 - ◆ to reduce the total annual carbon emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008; and
 - ◆ reach net-zero carbon emissions from international shipping by or around 2050;
- **to reduce carbon emissions from Hong Kong-registered ships by at least 11% (compared to 2019), driven by the Green Incentive Scheme on Carbon Intensity Indicator by 2026;**
- **for 55% of the diesel-fuelled vessels (166 in total) in the Government fleet to switch to using green maritime fuels (including bio-diesel in low concentration) by 2026 , subject to fuel availability;**
- **to reduce carbon emissions from the Kwai Tsing Container Terminals by 30% by 2030 (compared to 2021); and**
- **for 7% of the Hong Kong-registered ships to take up green maritime fuels by 2030.**

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Five Strategies and Ten Actions

The IMO has already set decarbonisation targets for the maritime industry. In order to take forward the development of green maritime fuel bunkering in Hong Kong, we must make preparation in pace with future market development and maintain Hong Kong's position as a bunkering port and our overall competitiveness in the age of green maritime fuels. To achieve the targets mentioned in this Action Plan, we have set out five strategies and ten actions for the development of green maritime fuel bunkering.

Strategy 1 Green Fuels

Action 1:

To adopt a multi-fuel strategy for a zero carbon emission future

There are many types of green maritime fuels, with different physical and chemical characteristics, way of transportation, storage and combustion, operational risk, technical readiness for bunkering, and market maturity. Technologies in relation to green maritime fuels are also evolving. Even a given type of green maritime fuel may have multiple subtypes with different levels of greenness depending on their methods of production. Taking LNG as an example, apart from traditional fossil LNG, bio-LNG can be produced from municipal or agricultural organic wastes. Meanwhile, the industry is also conducting research on the production of e-LNG using renewable electricity, green hydrogen and captured carbon. When choosing green maritime fuels, shipping companies need to consider, among other factors, the stability of supply (including bunkering locations), price trends, technical requirements for and cost of retrofitting existing vessels or building new vessels, level of carbon emissions of different green maritime fuels, characteristics of various fuels and complementarity with their business operations. Therefore, shipping companies' decisions on the choice of green maritime fuels are usually based on their needs, and there is currently no apparent consensus among the trade on which single type of green maritime fuel should be favoured. As retrofitting or building of ships involves significant investment, in the foreseeable future, the green maritime fuel market will appear to have diverse development. As an international maritime centre, we must adopt a multi-fuel strategy whereby different types of fuels (including green maritime fuels) could be provided to vessels flexibly, instead of focusing on the development of a single type of fuel, in order to respond to the future demand of the industry, keep in pace with market development and encourage the trade to move towards a zero carbon emission future in order to maintain the overall competitiveness of our port.

With holistic consideration of factors including the global market trend for ships and green maritime fuels, technical feasibility, fuel supply, decarbonisation potential, fuel cost, infrastructure and compatibility with our port, for ocean-going vessels, we suggest a progressive approach for proactively materialising the multi-fuel strategy in line with the

development of the market and international standards. Firstly, we will consider removing the relevant administrative regulatory barriers for the storage and carriage of bio-diesel at a higher concentration in order to encourage the trade to provide and use bio-diesel. We will also conduct the first demonstration of LNG bunkering within the first half of 2025. At the same time, we will prepare for green methanol bunkering in Hong Kong. Meanwhile, we are also monitoring the market development closely to conduct a feasibility study on developing green ammonia and hydrogen bunkering in Hong Kong, with a view to setting out the direction for their development to get a head start.



Multi-fuel strategy

As for local vessels, we suggest pushing for demonstrating the use of bio-diesel by the Government and stepping up promotional effort before the end of 2024 to encourage the use of bio-diesel by local vessels or even replacement with electric-powered vessels. Currently, vessels that use B5 to B24 blends of bio-diesel can conduct bunkering according to normal procedures, with no dedicated CoP required. As for electric-powered vessels, the Marine Department issued a relevant CoP in 2024. In addition, the Government has reserved \$350 million to subsidise four domestic ferry operators for building and trialling electric ferries and relevant charging facilities. The trial scheme will start to roll out in 2024. Meanwhile, we will engage a consultant to collect and analyse the data on the operation of the electric ferries in order to assess their effectiveness and performance in terms of operation and environmental friendliness.

Having considered the figures on ship orders, engine retrofiting orders and fuel supply, we consider that the aforementioned green maritime fuels and the proposed pace of development reflect the fuel choice by the international maritime community for the short to medium term.

We will monitor the latest development of the use of green maritime fuels by the international maritime industry closely to ensure that Hong Kong's supply of green maritime fuels can meet market needs effectively. In addition, the Shipping Legislation (Use of Fuels and Miscellaneous Amendments) Ordinance, which was enacted in October 2024 allows ships to use various new fuels safely. Even if other new fuels emerge in future, further amendment of the relevant legislation will not be necessary.

Action 2:

To catalyse the green maritime fuel supply chain and trade

Industry demand for different types of green maritime fuels varies with the degree of maturity of their development. Currently, there are about 600 LNG-powered vessels in operation in the world, with over 560 more on order. For vessels that can use green methanol, more than 50 are in operation and over 310 more on order. The development of ammonia-powered vessels is still at an early stage, with only two such vessels in the world and about 25 more on order.

Notwithstanding the above, as the development of green maritime fuels around the world is still in its infancy, the supply of green maritime fuels is still very limited and the price is high. Therefore, we expect that as more vessels that can use green maritime fuels come into operation, the supply of green maritime fuels will be outstripped by their demand in the short term. As such, all ports must actively try to secure reliable fuel supply in order to become green maritime fuel bunkering centres. Fuels are a major expenditure item for ship operation. Therefore, whether green maritime fuels are price competitive is equally important.

In this connection, the Government will actively foster the conclusion of green maritime fuel offtake agreements between green maritime fuel suppliers and shipping companies, and drive the setting of standards in relation to green maritime fuels by the industry. We will also reach out to stakeholders who are interested and have the capabilities to engage in the development of green maritime fuel bunkering in Hong Kong, such as green maritime fuel suppliers, bunkering operators, port operators, liners and quality certification agencies, to sign memoranda of understanding. In addition, we will set up a collaborative platform for their business development, among other facilitation measures, in order to help establish an effective channel for the supply and trade of green maritime fuels, thereby ensuring that Hong Kong has a stable supply of high quality green maritime fuels and allowing the organic development of a trading market for green maritime fuels.

We will also set up a Green Maritime Fuel Incentive Scheme within 2025, which serves to encourage pioneer companies to develop green maritime fuel bunkering business in Hong Kong. Considering that there is certain investment on preparatory work such as quantitative risk assessment and marine traffic impact assessment by companies before carrying out green maritime fuel bunkering, we suggest that subsidies should be granted to relevant companies after they have completed the relevant assessments and provided green maritime fuel bunkering services within a specified period of time.

Strategy 2 Green Port

Action 3: To develop a green maritime fuel bunkering ecosystem

Green maritime fuel bunkering involves many different aspects. We will support the industry and provide facilitation in different areas to foster the all-rounded development of the whole ecosystem for green maritime fuel bunkering.

Hong Kong's maritime fuel bunkering market has always been free, with no entry barrier. To start maritime fuel bunkering operations within Hong Kong waters, bunkering operators only need to conduct quantitative risk assessment and marine traffic impact assessment in respect of their bunkering operations, obtain approval from the Marine Department for their mode of operations and ensure that the bunkering vessels are locally registered vessels compliant with the prevailing statutory requirements on ship safety, dangerous goods control, etc. In view of Hong Kong's experience in the development of the maritime fuel bunkering market, we consider that keeping the market open will maintain market flexibility and healthy competition. However, since the market for green maritime fuel bunkering is currently still at an early stage in Hong Kong, the Government will provide support to the industry in a proactive manner in order to meet the challenges in different parts of the supply chain, including storage, bunkering, ancillary services and regulatory framework, thereby promoting the establishment and development of an ecosystem for green maritime fuel bunkering business.

In terms of storage, the Government will strive to provide storage facilities for different green maritime fuels in pace with the multi-fuel strategy. For LNG, the Government will explore using the offshore LNG terminal built by the two power companies to provide LNG for bunkering purpose, on the condition that it would not affect electricity generation, in order to make best use of existing facilities. For green methanol, the Government has identified a coastal port back-up land parcel in Tsing Yi South and will commence work in relation to the change of the land use to allow the site to be used for developing green maritime fuel storage. We expect to invite the industry to submit expressions of interest in 2025 in relation to developing methanol storage facilities on that site and launch the site at an appropriate juncture upon completion of the relevant planning procedures. In the long term, the Government will continue to identify suitable sites to increase green maritime fuel storage capacity to support the development of industries in relation to and a trading centre for green maritime fuels in Hong Kong.

The Government welcomes energy companies to retrofit some of the existing oil storage tanks for storage of green maritime fuels, on the condition that electricity generation will not be affected as a result. We also welcome interested companies to develop new onshore or offshore storage facilities in Hong Kong. Considering that companies may encounter restrictions in terms of land lease conditions or town planning requirements when undertaking the aforesaid retrofitting works or construction, the Government will provide suitable assistance in relation to the relevant administrative procedures.



The Hong Kong Offshore LNG Terminal commissioned in 2023

As for anchorages and sheltered spaces for barges for green maritime fuel bunkering, the Marine Department is working with the relevant project teams to rezone the anchorages in the Central Waters and the area south of Lamma Island to facilitate the anchorage of such barges. Relevant work includes completing a quantitative risk assessment in relation to the anchorages for barges for green maritime fuel bunkering by the first quarter of 2025. The target is to complete the relevant legislative exercise by 2026.

In terms of talents and ancillary services, besides providing green maritime fuel bunkering services, Hong Kong must provide other ancillary services such as ship maintenance as well. All of the aforesaid services require sufficient trained personnel to deliver. Therefore, the Government will provide policy support and assistance to facilitate the industry's hiring and training of relevant technical personnel. The relevant measures will be detailed under Action 10.

With the enactment of the Shipping Legislation (Use of Fuels and Miscellaneous Amendments) Ordinance 2024, Hong Kong has a proper regulatory framework to govern the safe usage of green maritime fuels by vessels in Hong Kong waters. In addition, the Marine Department will complete and promulgate the CoPs on the bunkering of LNG and green methanol in 2024 and 2025 respectively in order to ensure the safety of the relevant vessels, personnel and the environment.

Action 4:

To simplify the approval process for green maritime fuel bunkering

Green maritime fuels differ from traditional fossil fuels in terms of physical and chemical characteristics, way of transportation, storage and combustion, risk of operation in terms of bunkering, etc. Therefore, green maritime fuel bunkering operators must prepare marine traffic impact assessment, quantitative risk assessment, etc. and obtain approval from the Marine Department and other relevant Government departments in accordance with the relevant legislation and CoPs prior to implementation of green maritime fuel bunkering.

The Marine Department will set up a dedicated team to provide one-stop services for companies interested in setting up green shipping-related businesses in Hong Kong, and increase the efficiency and transparency of approval procedures in relation to green maritime fuel bunkering and hence facilitating the development of bunkering business by providing marine traffic data and basic requirements and guidelines for marine traffic impact assessments and quantitative risk assessments to applicants interested in conducting green maritime fuel bunkering operations.

Action 5:

To reduce emissions from port operations

The Government supports the operators of the Kwai Tsing Container Terminals in reducing carbon emissions from port operations through the use of electric-powered or hybrid-powered port equipment, introduction of renewable energy within the port, enhancement of energy efficiency, elevation of the level of automation, etc., with a view to reducing carbon emissions by 30% (compared with 2021) by 2030 and achieving carbon neutrality by 2050. In fact, container port operators have been modernising their hardware and software, including reconfiguring rubber-tyred gantry crane and enabling remote control for improving port productivity and occupational safety. With the objective of enhancing efficiency, three of the terminal operators also founded OnePort Limited to provide information and paperless services in the port community (such as electronic Terminal Receipt, Common Barge Platform, electronic Booking Confirmation Note, electronic Release Order system, electronic Gate). Moreover, quay cranes equipped with solar panels have been installed on top of machinery house. Other modern technologies such as the use of autonomous trucks within terminal



areas have also been explored. The Government will continue to maintain close communication with port operators and encourage them to deploy more measures to reduce carbon emissions in order to prepare Hong Kong for participation in green shipping corridors.

Action 6:

To holistically build a green Government fleet

At present, the Government fleet under the Marine Department has ten vessels using bio-diesel. As there is no need for major retrofitting of engines for existing diesel-powered vessels to switch to using bio-diesel, the Government will explore driving the use of bio-diesel by Government vessels through such means as amending the relevant procurement policy. The Marine Department will also explore providing bio-diesel at the Government dockyard to facilitate bunkering for Government vessels switching to bio-diesel.

The functions of Government vessels vary with their operational needs, meaning that the use of green maritime fuels is not suitable for all Government vessels. For Government vessels that have the potential for switching to other types of green maritime fuels (such as green methanol) in terms of their functions (such as patrol ships and work boats), the Government will also explore the amendment of the relevant procurement policy so that such ships will have to be replaced with green maritime fuel-powered ones upon decommissioning. The Marine Department will set up an inter-departmental working group with those Government departments with vessels suitable for switching to using green maritime fuels to explore and enhance the understanding of the technological developments in relation to green maritime fuel-powered vessels regularly. Furthermore, the Marine Department will draw up a procurement roadmap for the relevant departments and provide support in relation to the switch to green maritime fuels by vessels, including providing advice on design and procurement of green maritime fuel-powered vessels, facilitating bunkering of green maritime fuels at the Government dockyard, providing seamen working on Government vessels with training on the use and bunkering of green maritime fuels, etc. The Marine Department's long-term target is to share the experience in and data collected from the use of green maritime fuels by Government vessels with owners and operators of local vessels in order to support local vessels in going green.

The Marine Department commenced the feasibility study on deploying green methanol-powered vessels in 2024, with the target to order the first batch of green methanol-powered vessels within 2027, so as to launch the pilot scheme for Government fleet to start using green methanol-powered vessels. The Marine Department will also study various ways to provide bunkering of green maritime fuels such as green methanol for Government vessels at the Government dockyard. In addition, the Marine Department will amend the tender marking criteria for contracts in relation to ship rental by the Government, so that providers of green maritime fuel-powered vessels will score additional points; and review at an appropriate juncture the conditions of the ship rental market, with a long-term view for the Government to rent green maritime fuel-powered vessels only. These measures aim for the Government to set an example for the industry to encourage their use of green maritime fuel-powered vessels.

Strategy 3 Green Incentives

Action 7: To subsidise green transformation of vessels

The transition to green transport is an irreversible trend. Currently, the EEB has already set up the New Energy Transport Fund that subsidises transport operators for trialling green innovations, including new energy ships. In view of the significant increase in cost for the maritime industry during green transition, including the cost of retrofitting existing vessels or ordering green maritime fuel-powered vessels, as well as that of switching to using green maritime fuels which are relatively expensive at the moment, the Government will also consider reducing the port dues and registration fees for green maritime fuel-powered vessels to help lower the cost of transitioning to green maritime fuel-powered vessels and narrow the price gap between traditional maritime fuels and green maritime fuels. In addition, depending on the procurement details and requirements of individual financial institutions, the industry may obtain funding for procuring green maritime fuel-powered vessels through issuing green bonds or taking out green loans. The Government has launched the Green and Sustainable Finance Grant Scheme to provide financial assistance to eligible green and sustainable bond issuers and loan borrowers to cover their expenses on bond issuance and external review services.

In terms of tax, there is currently no tax on imported hydrocarbons for use as fuels for ocean-going vessels, imported light diesel oil for some local maritime uses, or imported LNG or ammonia for any uses. On the other hand, imported methyl alcohol and any admixture containing methyl alcohol are not exempted from tax. Having considered the benefits of green methanol on decarbonisation and achievement of carbon neutrality and the exemption of tax for other imported fuels that are relatively environmentally friendly, we will explore exempting imported green methanol for bunkering purpose from tax. Also, the trade of green maritime fuels is a type of commodity trade as well. Therefore, the tax concessions and support measures to be explored as mentioned in the Chief Executive's 2024 Policy Address for creating an ecosystem for commodity trading shall be applicable to green maritime fuel trading too.

Action 8:

To develop green-friendly arrangements for usage of port facilities

For Hong Kong-registered ships, the Marine Department will promote green maritime fuels at various seminars and company visits it regularly conducts. It will also invite relevant experts and influencers in the industry to dedicated events, to help shipping companies to learn about the latest developments in relation to green maritime fuels and drive better use of such new fuels by Hong Kong-registered ships.

The Marine Department will also deploy non-financial incentives to facilitate the operation of ships using green maritime fuels. In view that the energy density of green maritime fuels is relatively low, green maritime fuel-powered vessels are expected to be larger than existing vessels in order to store a larger volume of fuels than they do now of traditional fuels, to sustain long distance voyages. In addition, gaseous fuels stored at low temperatures must undergo certain preparation procedures before their bunkering may take place, thereby lengthening the time required for the whole bunkering process. Congestion may occur at anchorages when a large number of green maritime fuel-powered vessels converge and bunker there. The Marine Department will institute a scheme on anchorage use priority, with green maritime fuel-powered vessels given priority to use anchorages for bunkering if necessary. The Marine Department will come up with and announce the arrangement for priority use of Hong Kong port facilities by green maritime fuel-powered vessels within 2025.



Strategy 4 Green Collaboration

Action 9:

To foster regional cooperation in relation to green maritime fuel bunkering

Mainland China is a major production base for multiple green maritime fuels. At present, many companies have already set up production facilities in Mainland China, which have the potential to provide relatively stable supply of green maritime fuels for Hong Kong's maritime industry. At the same time, maritime training institutes in Mainland China can provide training on green maritime fuel-powered ships, bunkering techniques and management for maritime industry practitioners in Hong Kong. With the unique advantage of having the Motherland as our back-up, the Government will collaborate with ports in the GBA and other provinces on green maritime fuel bunkering, including driving the conclusion of cooperation agreement between industry organisations in Mainland China and Hong Kong over fuel supply, transport and distribution, bunkering operation, technical exchange and manpower training, thereby achieving synergy.

Furthermore, the concept of green shipping corridors is emerging. Such corridors generally involve two or more ports that are some distance apart and have a sizeable volume of cargo transported between them. Participating ports and relevant stakeholders take various measures and actions to ensure that the corridors can support low-carbon or zero-carbon operation of vessels travelling along them, including pursuing port decarbonisation, developing green maritime fuel bunkering services and storage facilities, etc. As of February 2024, there were nearly 60 green shipping corridors that were at the initiating or planning stage, involving various ports such as Shanghai, Rotterdam, Singapore and Los Angeles.



Developing green shipping corridors will help to drive green transformation of Hong Kong Port, speed up the construction of hardware in relation to green maritime fuels, and help various stakeholders of the corridors reach their respective decarbonisation targets, thereby attracting more companies in the maritime industry to choose to use the corridors and increasing the throughput and competitiveness of Hong Kong Port in the long run. The Government will actively identify ports that already have frequent maritime connections and high bilateral cargo volume growth potential, taking into consideration various factors, including the foundation for commercial cooperation with them and the progress on green transition of their ports, to explore developing green shipping together. The aim is to identify at least one suitable port for developing a green shipping corridor with Hong Kong by 2026 and kick-start the relevant discussion. As it takes time to initiate, plan and implement a green shipping corridor, in view that some of the announced green shipping corridors are relatively advanced in their preparation, the Government will continue to take forward the work in relation to green port transition and development of green fuel bunkering, so that Hong Kong will be prepared and at a suitable time consider joining existing green shipping corridors to expedite Hong Kong's transition to green shipping.

Strategy 5 Green Expertise**Action 10: To nurture talents in relation to green maritime fuels**

The Government supports the hiring of local workers for bunkering operations as far as possible and encourage local educational institutions to dedicate to nurturing talents specialising in green maritime fuel-related businesses. The Government has already identified eight suitable training courses on green maritime fuels in the GBA and is arranging for the confirmation of them as locally-approved courses to allow maritime industry practitioners in Hong Kong (such as seafarers) to take the relevant training courses. We expect to train 50 talents in relation to green maritime fuels by early 2026. Besides, we encourage local maritime training institutions to provide green maritime fuel-related training courses in English.

The Government will also enhance the subsidy schemes under the Maritime and Aviation Training Fund and expand their coverage to green maritime fuel-related courses offered in Mainland China and beyond in order to train local talents and establish a pool of local personnel for green maritime fuel bunkering. We will also launch new subsidy schemes to support local industry organisations and academic institutions to organise large-scale green shipping seminars, workshops and conferences annually in Hong Kong, and provide immigration facilitation for relevant overseas speakers and professionals coming to Hong Kong for short-term activities in designated sectors. We believe that this will foster knowledge exchange between local and non-local industry practitioners and be conducive to the development of green shipping in Hong Kong. Such measures will also help Hong Kong develop into a training centre on green maritime fuel in the region and provide more suitable training and exchange opportunities for practitioners from Hong Kong and other places.

On the other hand, in order to satisfy short-term development need, the local industry can currently hire non-local ship repair and maintenance professionals to work in Hong Kong through such suitable talents importation schemes as Quality Migrant Admission Scheme and Admission Scheme for Mainland Talents and Professionals. Moreover, the Government will add green shipping talents to the Talent List to make it easier for talents in relation to green maritime fuel bunkering to come to Hong Kong to meet the city's short-term development needs in this regard.

Conclusion

To conclude, the following specific actions are suggested in this Action Plan:

2024:

- To start encouraging the use of bio-diesel
- To complete the drafting of the CoP on LNG bunkering
- To enact the Shipping Legislation (Use of Fuels and Miscellaneous Amendments) Ordinance 2024
- To set up a task force in the Marine Department to provide one-stop service to green shipping-related organisations interested in establishing presence in Hong Kong
- To continue to liaise closely with port operators with a view to encouraging the adoption of different approaches to reduce carbon emissions from port operations
- Marine Department to set up an inter-departmental working group with Government departments which have ships suitable for using green maritime fuels to explore and enhance understanding of the technological development in relation to vessels using green maritime fuels on a regular basis
- To commence discussion and collaboration on talent training and green maritime fuel supply within the GBA and with other provinces in Mainland China
- To start identifying training programmes related to green maritime fuel, so as to provide training and exchange opportunities to practitioners in Hong Kong and other places
- To continue to facilitate the admission of relevant talents to Hong Kong through various schemes

2025:

- To complete the drafting of the CoP on green methanol bunkering
- To commence early preparation for the next stage of green maritime fuel adoption, including setting the future development directions for hydrogen and green ammonia bunkering in Hong Kong
- To establish the Green Maritime Fuel Bunkering Incentive Scheme to encourage pioneer enterprises to start green maritime fuel bunkering businesses in Hong Kong
- To provide a platform for forging collaboration among stakeholders interested in developing green maritime fuel bunkering in Hong Kong
- To invite Expressions of Interest from the industry in the conversion of a land parcel near the port in Tsing Yi South for green maritime fuel storage
- To announce the details on reduction in the port dues and registration fees for ships powered by green fuels and complete the relevant legislative procedures

- To explore the provision of tax exemption for green methanol used for bunkering
- To formulate and announce arrangements for priority use of port facilities by vessels using green maritime fuels
- To enhance publicity to promote green maritime fuels to the industry

2026:

- To designate anchorages and sheltered spaces for barges for green maritime fuel bunkering
- To identify at least one suitable port for developing a new green shipping corridor with Hong Kong, commence discussion with the port on the establishment of our first green shipping corridor, and consider joining existing green shipping corridors when appropriate
- To launch a new funding scheme to support local industrial organisations and academic institutions to organise large-scale maritime seminars, workshops, conferences, etc. in Hong Kong annually to promote knowledge exchange among local and non-local industry players
- To train 50 green maritime fuel-related talents

Green transition by the international maritime industry and the adoption of green maritime fuels are irreversible. Green transition is also a development opportunity for Hong Kong maritime and port industries. Hong Kong needs to maintain its port services (including existing bunkering services) on one hand, and complement market development by providing bunkering of high-quality green maritime fuels in a timely manner on the other hand, in order to sustain the competitiveness of Hong Kong Port and consolidate Hong Kong's status as an international maritime centre.

Apart from developing green maritime fuel bunkering, we also hope to make best use of Hong Kong's strengths and qualities, including our edge as the world's freest economy, our prowess as an international financial and trading centre, our highly open and efficient market, and the business-friendly environment welcoming companies from different trades and talents from all over the world, to develop industries in relation to green maritime fuels and establish a trading centre for such fuels, thereby creating even greater economic values.

We will work hand in hand with the industry to implement the strategies and actions in this Action Plan. We will also closely monitor the development in the international maritime market, maintain close liaison and cooperation with the industry, constantly review the policy and measures in relation to the green maritime fuel bunkering, improve green maritime fuel bunkering services and other ancillary services, and step up promotion of Hong Kong's strengths in green maritime fuel bunkering, with a view to developing Hong Kong into a premier international green maritime fuel bunkering centre in the region.

Photo courtesy:

Anglo-Eastern Ship Management Limited

CLP Power Hong Kong Limited

Fleet Management Limited

Hongkong International Terminals Limited

Hong Kong Shipowners Association (HKSOA)

Maersk Shipping Hong Kong Ltd.

Wallem Group Ltd.

